

**QUARTERLY REPORT - PUBLIC PAGE**

GTI PROJECT NUMBER 20753

# In-field Corrosion Rate Measurement

**DOT Prj# 256****Contract Number: DTPH56-08-000022****Reporting Period:**1<sup>st</sup> Project Quarter**Report Issued (Period Ending):**

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## Results and Conclusions

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The objective of this project is to estimate corrosion growth-rates, reduce assessment costs, and improve the selection of reassessment intervals of pipelines and increase their safety. This will be achieved by: (1) performing field tests and demonstrations to promote the use of linear polarization resistance (LPR) and electrical resistance (ER) technologies by gas utilities, (2) correlate the results with other measurement methods, (3) evaluate soil parameters that affect localized corrosion, and (4) incorporate the measurements in a database program that improves corrosion-rate estimates with the increasing number of soil data and corrosion measurements.

The first task is to prepare for the field tests and demonstrations at the utilities sites. Sites from five gas utilities were selected. The sites were selected with a diversity of pipe types, soil conditions, and historical records from previous inspections related to external corrosion direct assessments (ECDA). This task is complete. In preparation for the utility field tests, a site at GTI will be set up.

Testing equipment has been ordered and draft procedures have been reviewed. Examples of field measurements include soil moisture content, pH, soil resistivity, chloride and sulfite levels and soil redox potential.

External corrosion growth rates are an essential parameter needed to evaluate the time interval between pipeline integrity evaluations. Actual corrosion rates are difficult to measure or predict. Methods for obtaining corrosion rates include direct comparison of historical data, corrosion behavior in different soil chemistry and conditions, and various corrosion monitoring techniques. Historical soil data from a 2007 study by the National Institute of Standards (NIST) was reviewed.

A meeting was held in October with the DOT COTR and project progress was reviewed.

## Plans for Future Activity

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External corrosion growth-rate is an essential parameter to establish the time interval between successive pipe integrity evaluations. Actual corrosion rates are difficult to measure or predict. ANSI/NACE Standard RP0502 for direct assessment (DA) of pipe external corrosion recommends several methods for obtaining corrosion rates, including direct comparison with historical data, use of buried coupons, electrical resistance (ER) probes, and Linear Polarization Resistance (LPR) measurements.

Testing equipment will be setup and checked out. Procedures for each instrument will be evaluated. Details for the GTI test site will be worked out. The test site will have four soil types; granular soil, silty-sandy soil, cohesive soil, and flowable fill backfill. The sites will be approximately 8 ft X 8 ft X 4 ft deep.

Respectfully Submitted,



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***End of Report***